I DD 6888
5b.c
6.11-12

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

OFFICE OF
COMPLIANCE AND ENFORCEMENT

JUN 11 2012

Reply to: OCE-127

Certified Mail Number 7011 2970 0000 0876 4392
Return Receipt Requested

FILE COPY

James Cagle, Risk Manager - EHS
Nu-West Industries, Inc.
Agrium Conda Phosphate Operations
3010 Conda Road
Soda Springs, Idaho 83276

Re: Revision to Work Plan for Additional Requirements to incorporate Revised Drilling and Geophysical Logging Approach;
Administrative Order on Consent for Nu-West Industries, Inc.; Idaho Facility, Docket No. RCRA-10-2009-0186

Dear Mr. Cagle:

As we discussed on June 8, the proposed changes in drilling and geophysical surveys that EPA and Nu-West Industries ("Nu-West") have been discussing are significant, and the Work Plan for Additional Requirements ("Work Plan") will need to be revised to incorporate these changes. The schedule in the Work Plan will also need to be revised to reflect the completion of these activities.

EPA has reviewed the letter from WSP Environment & Energy dated June 7, 2012, that identified the proposed locations for confirmation boreholes along the seismic reflection (SR) transects. In the interest of getting a revised Work Plan that can be expeditiously approved, I have included as an enclosure to this letter the text from the June 7 letter, with changes, that can be imported into the revised Work Plan. All changes to that text are indicated by a strikeout / add text feature. I think that it makes sense to simply include this as Section 7 to the revised Work Plan, and to renumber the subsequent sections accordingly. Should you choose to adopt this formatting proposal, the following pages to the Work Plan will require changes to correctly reference the changes: ii, 1, 20, 21, 22, 23, 24, and Figure 4. However, other formatting options are acceptable to EPA.

Standard operating procedures for field sampling of the following parameters will also need to be included in the revised Work Plan and Quality Assurance Project Plan (QAPP): pH, conductivity, temperature, turbidity, nitrate, sulfate, and orthophosphate. The QAPP is referenced in section 5.2.3 of the Work Plan.

You will note that the EPA revisions call for the shallow alluvium / basalt zone be monitored at all six down-gradient locations, identified in Figure 1 to the June 7 letter, through installation of shallow monitoring wells. This is a change from what EPA had last discussed with Nu-West. After further internal discussion, we have determined that that any amount of groundwater present in the shallow zone above the basalt will need to be monitored. Potential releases of water and other substances from the impoundments and from other operations would impact the shallow zone first and prior to potential impacts below the basalt.

Should Nu-West wish to discuss how to proceed, EPA is available for a conference call anytime from 8 am – 2 pm (Mountain) on Tuesday, June 12 or from 8 am – 12 pm, Thursday, June 14 this week. Please let me know if you would like to hold a conference call, and we will accommodate you. I can be reached at (206) 553-2964. Alternatively, you may reach me via email at: Magolske.Peter@epamail.epa.gov.

Thank you for your attention to this important matter.

Sincerely,

Peter Magolske
Air / RCRA Compliance Unit

Enclosure

cc: Brian Monson, Idaho Department of Environmental Quality
P. Scott Burton, Esq. Hunton and Williams LLP

7 Borehole Drilling and Geophysical Logging ~~Approach~~ Procedures for Downgradient Locations along SR Transects

The following revised borehole drilling, geophysical logging, and monitoring well procedures are applicable to the downgradient locations along the SR transects. For any conflict in requirements found elsewhere in the Work Plan, the requirements in this section shall apply.

Two air rotary methods are included in the revised approach, air rotary using a down-the-holehammer (DTHH) with (i) simultaneous casing advancement (hereafter referred to as advanced casing air rotary) and (ii) without simultaneous casing advancement (hereafter referred to as direct air rotary).

Soil-Bedrock Interface Evaluation

Initially, one borehole will be advanced in each of the six locations using nominal 14-inch diameter direct air rotary drilling methods. The borehole will be advanced to seven (7) feet below the top of bedrock, which is assumed to be between approximately 15 to 30 feet below ground surface (bgs), however, the actual depth to top of bedrock will be identified during drilling at each location. Upon reaching this depth, the drill string will be removed from the borehole to monitor for the appearance of groundwater for at least 45~~30~~ minutes.

If a water column of at least 0.2 ~~approximately two~~ feet ~~or more~~ is present in the borehole after 45~~30~~ minutes, a monitoring well will be installed in the borehole and screened across the soil-bedrock interface from three (3) feet above the top of bedrock to seven (7) feet below the top of bedrock. If collapse has occurred in the borehole and the presence of water within the borehole cannot be determined with respect to the bottom of the borehole, then collapsed material will be removed from the hole and the determination of the occurrence of water will be repeated.

The chemistry of detectable water at the interface between the basalt and overburden will be assessed from a grab sample collected using a polyethylene bailer. The sample will be analyzed for field parameters including pH, conductivity, temperature, and turbidity using a multi-parameter water quality meter (e.g., Horiba U-52). Additional analyses will be conducted using Hach field test kits for nitrate (Hach method 8039), sulfate (Hach method 8051), and orthophosphate (Hach method 8114 or 8048). The procedures will be followed as published and waste materials will be handled appropriately as investigation derived waste. The monitoring wells will be constructed using 4-inch diameter, flush-threaded Schedule 40 polyvinyl chloride (PVC) casing and 0.020-inch slotted screen with a bottom end cap. The PVC casing will be fitted with a single centralizer at the bottom of the screened interval to ensure that the well is centered in the borehole. The annular space will be backfilled with a clean sand filter pack installed to a minimum of two (2) feet above the top of the screen. If the screened interval is submerged, a surge block will be used to settle the filter pack before placement of the annular seal. Additional filter pack material will be placed in the well to compensate for settling of the pack material as a result of the surging process until pack is stabilized at two (2) feet above the screen top. A minimum 3-foot thick bentonite seal will be placed on top of the sand pack (after completion of surging) and consist of bentonite chips or pellets hydrated in place. The remaining annular space will be sealed with a bentonite-cement slurry grout containing no more than 5% bentonite per Idaho Administrative Rules for well construction. The slurry grout will be placed in the borehole using a tremie pipe to approximately three (3) feet bgs.

If less than 0.2 ~~approximately two (2)~~ feet of groundwater is present in ~~enters~~ the initial borehole, a permanent, nominal 10-inch diameter steel conductor casing will be installed and grouted into place using a bentonite-cement (neat cement) slurry grout tremie piped from the surface and allowed to cure for a minimum of 24 hours. The borehole will be used for bedrock groundwater evaluation, as described in the following sections.

If less than 0.2 ~~approximately two (2)~~ feet of groundwater is present in ~~enters~~ the initial borehole and a conductor casing is installed, a second ~~offset~~ borehole offset at least 20 feet from the first borehole will be advanced to seven (7) feet below the top of bedrock, and the groundwater evaluation at the soil-bedrock interface will be repeated as described for the initial borehole. If no groundwater is detectable within each of these two boreholes to their temporary total depths 7 feet beyond the interface between the basalt and overburnden ~~If less than approximately two (2) feet of groundwater enters both boreholes~~, then ~~no monitoring well will be installed at the soil-bedrock interface, and both boreholes will be used for the bedrock groundwater evaluation described below.~~ a third well will be completed at a spacing of at least 20 feet from the other wells at this location. This well will be completed to the same 7-foot depth into the bedrock with a 10-foot screen as described above. The completion of this well will be without regard to the observation of water at the time of drilling.

Lithologic observations, the occurrence of groundwater at the soil-bedrock interface, the observed chemistry, and well construction information will be communicated to EPA at the conclusion of each day during the soil-bedrock interface evaluation.

Bedrock Borehole Drilling and Vertical Groundwater Profiling

At each of the six locations, two boreholes will be installed to evaluate bedrock groundwater; one borehole with a monitoring well screened at the initial bedrock water-bearing zone and one borehole with a monitoring well screened in a deeper water-bearing zone which is at least 20 feet below the bottom of the screened interval for the shallow well. The bedrock boreholes will be initially constructed with a conductor casing installed to 10 feet below the top of bedrock to case off potential perched groundwater if a soil-bedrock interface monitoring well was installed. Similar to the well description above, boreholes will be advanced using nominal 14-inch diameter direct air rotary drilling methods for installation of the nominal 10-inch diameter steel conductor casing, which will be grouted into place.

Within the deep bedrock boreholes, vertical groundwater profiling and borehole geophysical logging will be conducted, followed by monitoring well installation in a deeper water-bearing horizon. The other bedrock borehole will be advanced for monitoring well installation in a shallow water-bearing zone.

The deep borehole drilling will utilize nominal 8-inch diameter advanced casing air rotary drilling methods. Observations during drilling will include lithology of cuttings, advancement rate, depth of first strike of groundwater, and rate of groundwater production during drilling. The borehole will be advanced to the first strike of groundwater and stopped within 10 feet of first strike. At this depth, the borehole will be developed using compressed air from the drilling rig (i.e., blow out the borehole) for approximately 20 minutes, while observing the groundwater yield. The exact methodology for borehole development will be determined in consultation with the driller and may include retracting the advanced casing a few feet to improve communication with the water-bearing zones. After development, the drill bit will be removed while leaving the advanced casing in the borehole. The water level in the casing will be observed for approximately 20 minutes, or until stabilized, and a grab sample will be collected using a polyethylene bailer. The sample will be analyz~~s~~ed for field parameters including pH, conductivity, temperature, and turbidity using a multi-parameter water quality meter (e.g., Horiba U-52). Additional analyses will be conducted using Hach field test kits for nitrate (Hach method 8039), sulfate (Hach method 8051), and orthophosphate (Hach method 8114 or 8048).

Advancement of the deep borehole will continue using nominal 8-inch diameter advanced casing air rotary drilling methods to a total depth of approximately 60 feet below the first strike of groundwater, stopping in 10 foot increments for development and grab sampling using the procedure described above. In the event that no additional water-bearing zones are identified within 60 feet of the first strike of groundwater, the borehole will be advanced until a second water-bearing zone is identified.

Lithologic observations, the occurrence and relative yield of water-bearing zones, and the results of groundwater profiling will be communicated to EPA at the conclusion of each borehole during the drilling and vertical groundwater profiling.

Bedrock Borehole Geophysical Logging

In the deep bedrock borehole, downhole geophysical logging will be conducted after the borehole is advanced to the target depth. Geophysical logging will include natural gamma, neutron porosity, and gamma-gamma-density logs run through the advanced casing. The drilling observations and geophysical logging results will be reviewed to assess the potential for borehole collapse and identify zones likely to collapse. Key criteria for likely collapse within the basalt sequence include identification of interflow zones greater than approximately 10 feet in thickness characterized by intensely weathered basalt or scoria cuttings, the presence of sedimentary cuttings that correlate to the depth of prominent deflections in the geophysical logs, or notable changes in the rate of groundwater production during drilling. If the boreholes encounter the bottom contact of the basalt sequence and the underlying sedimentary sequence, likelihood of collapse will be based on the lithology and total thickness of the sedimentary thickness encountered in the borehole.

Due to the reduced inner diameter of the drilling shoe on the advanced casing, the entire drill string will be removed from the borehole following the initial geophysical logging. The drilling shoe will be removed from the advanced casing to increase the inner diameter at the bit face, and the casing will be re-advanced to total depth. If borehole collapse prevents advancing the casing independently, nominal 6-inch diameter air rotary drilling methods will be used through the advanced casing to clean out the borehole obstruction below the casing.

If borehole collapse occurs or likely collapse zones are identified, the bottom of the advanced casing will be raised to a competent zone underlying the likely collapse zone, and an acoustic televiewer and caliper log will be acquired for the open portion of the borehole below the advanced casing. The casing will then be raised to the next competent zone, and additional acoustic televiewer and caliper log data will be collected in the newly exposed portion of the borehole. In this manner, a nearly continuous acoustic televiewer and caliper log will be collected even if portions of the borehole are prone to collapse while minimizing the risk of losing a geophysical logging tool. Removal of the advanced casing drilling shoe is required in order to obtain a useable acoustic televiewer log because the reduced inner diameter of the drilling shoe prevents being able to set the tool centralizers to the actual borehole diameter, which for an acoustic televiewer will compromise the log because the tool is not appropriately centered in the borehole.

The results of borehole geophysical logging will be communicated to EPA at the conclusion of logging within each borehole.

Bedrock Monitoring Well Installation, Development, and Groundwater Sampling

The screened intervals for monitoring wells installed in both the shallow and deep bedrock boreholes will be determined in consultation with EPA and based on a review of data collected from the deep boreholes, including drilling observations, first strike and static water levels measured in the boreholes and nearby monitoring wells, the results of vertical groundwater profiling, and the results of geophysical logging. The screened interval for the shallow bedrock borehole will correspond to the first water-bearing zone. The screened interval for the deep bedrock borehole will correspond to the second water-bearing zone and be at least 20 feet below the bottom of the screened interval in the shallow bedrock borehole. As such, the shallow bedrock monitoring well may be dry during periods of lower groundwater elevations, but the deeper bedrock monitoring well will be screened in a perennially saturated water-bearing zone such that it yields water at all times. WSP requests that EPA respond within 24-hours regarding proposed screen intervals.

The monitoring wells will be constructed using 4-inch diameter, flush-threaded Schedule 40 polyvinyl chloride (PVC) casing and 0.020-inch slotted screen with a bottom end cap. The screen lengths will be 20 feet. The PVC casing will be fitted with centralizers every 20 feet to ensure that it remains plumbed and aligned in the borehole during installation. The annular space will be backfilled with a clean sand filter pack installed via a tremie pipe to a minimum of two (2) feet above the top of the screen. A surge block will be used to settle the filter pack before placement of the annular seal. Additional filter pack material will be placed in the annular space to compensate for settling of the pack material as a result of the surging process until pack is stabilized at two (2) feet above the screen top. A minimum 3-foot thick bentonite seal will be placed on top of the sand pack (after completion of surging) and consist of either bentonite chips or pellets or a bentonite slurry installed via tremie pipe, depending on the height of the water column above the screened interval and the depth below ground surface. The remaining annular space will be sealed with a bentonite-cement slurry grout containing no more than 5% bentonite per Idaho Administrative Rules for well construction. The slurry grout will be placed in the borehole using a tremie pipe to approximately three (3) feet bgs.

Monitoring well development and groundwater sampling will be conducted in the new monitoring wells in accordance with the methodology presented in Section 8 of the Work Plan, ~~for Additional Requirements, dated July 11, 2011.~~, except for the well construction dimensions and screening intervals, which are described above. Figure # **[insert]** shows the locations for the monitoring well locations.